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RING ROT OF POTATO

J. W. Miller

Ring rot of potato (Solanum tuberosum L.), caused by the bacterium Corynebacterium sepedonicum (Spieck and Kotth.) Skapt. and Burkh., may result in severe losses when infected seed pieces are planted in Florida. In 1937, a loss of $100,000 was suffered in the Hastings area where infected seed pieces were used. Losses were reduced to $20,000 and $10,000 in 1938 and 1939, respectively, following agreements with officials in Maine and in New Brunswick, Canada, to reject for certification all fields where ring rot was found. The losses for 1938 and 1939 can be attributed to "selected" seed having a trace or more of the disease (1).

SYMPTOMS. The disease may kill young plants, but symptoms usually appear during the last 30 days of the growing period in Florida. Infected plants initially show wilting by day, recovery by night, and are stunted. Later, interveinal chlorosis develops followed by a dry necrosis of the chlorotic areas and curling upward of the leaf margins (fig. 1A). Wilting of the entire plant occurs, and ultimately the plant dies. At this stage, the vascular system is discolored, and a creamy bacterial exudate can be squeezed from the cut end of an infected stem.

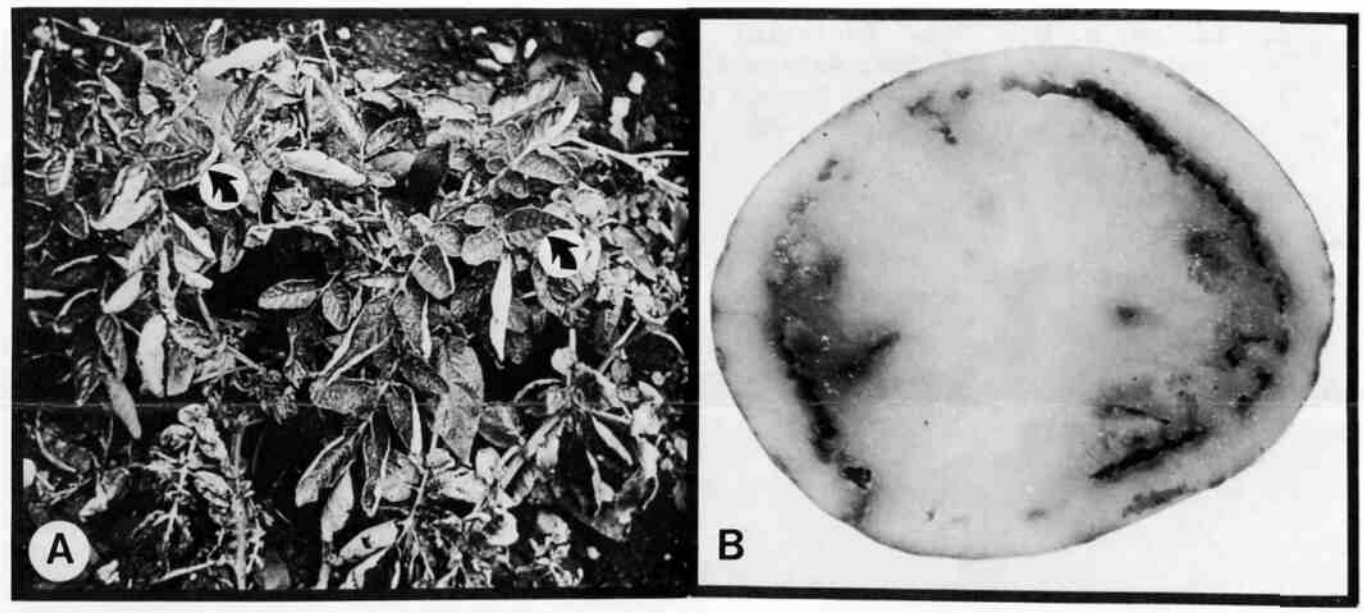

Fig. 1. Ring rot of potato caused by Corynebacteriurn sepedonicum. A) Foliage of infected plant showing interveinal chlorosis and upward curling of leaves. B) Infected tuber showing rot and cavity formation around vascular tissue.

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Infected tubers show a yellow discoloration which is limited to the vascular tissues. Later this tissue decays, and often adjacent tissues separate, resulting in cavity formation (fig. 1B). A cheesy, cream-colored exudate can be squeezed from the vascular tissue. The exudate, a positive gram stain reaction of bacteria in the exudate, and disease development in inoculated tomatoes (only an assay host) positively confirm the presence of C. sepedonicum.

DISEASE DEVELOPMENT. Since C. sepedonicum is not known to oversummer in Florida soils, the bacterium is perpetuated mainly by use of infected seed pieces. Spread in planting seed may come from contact between infected and healthy seed or even more likely during the seed-cutting operation, a trace infection can lead to as high as 30% disease development by the end of the season (1). The bacterium can also survive several months on equipment and machinery, such as bags, bins, seed cutters, diggers, etc. Because of this, new infection can occur during cultural operations that cause wounding (2).

CONTROL. The key to ring rot control is use of certified seed potatoes where there is zero tolerance for this disease. Because of the highly infectious nature of the ring rot organism, no other control measure affords the degree of control as does the use of certified seed. Further, all equipment and machinery used in a crop which had ring rot should be disinfested with quaternary ammonia, phenolic compounds, or hypochlorite solution. Because wounds are required for entrance of the bacteria, disinfestation of cutting knives, storage bins, planters, and other required equipment is essential. Some potato varieties have resistance to ring rot, but none are immune (2).

Literature Cited

1. Eddins, A. H. 1940. Bacterial ring rot of potatoes. Press Bulletin 545, University of Florida, Gainesville. 2p.
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